US EPA

REGION 4

Nonpoint Source Program Success Story

Florida

Cocoa Riverfront Park Stormwater Improvement - City of Cocoa

Waterbody Improved

The Cocoa Riverfront Park project area is located on the Atlantic Coastal ridge and drains to the Indian River Lagoon (IRL). The IRL is a state priority waterbody designated under the Surface Water Improvement & Management (SWIM) Program and is also an "estuary of national significance" with its inclusion in the National Estuary Program. Section 319 funds of the Clean Water Act were used in the project to install a stormwater treatment train.

OVERVIEW

Cocoa Village, constructed in the early 1900s, is typical of many older urban areas in the region. As was typical of the time, the primary purpose of the stormwater system serving this area is drainage, with little retention, detention or treatment provided. Most sites are entirely impervious surfaces, such as buildings, parking lots and sidewalks. Very little area is available for storage, treatment or percolation of stormwater, while much of the drainage system is characterized by undersized stormwater pipes.

Many of the existing drainage inlets do not allow access and maintenance without total removal of the inlet pipes. Pollutants discharged from the drainage system to the IRL include localized trash, silt and parking lot runoff (primarily heavy metals and oils). A large amount of trash is collected by the drainage system as the result of pedestrian traffic, cultural events, an abundance of on-street parking and numerous small parking lots. Untreated runoff is conveyed into the Indian River Lagoon through seven separate piped drainage systems.

Potential existed within the Waterfront Park site to capture direct runoff from the drainage system and re-route it for treatment and subsequent reuse. Three of the seven existing pipe systems run directly through, or adjacent to, the Waterfront Park site.

HIGHLIGHTS

The Cocoa Riverfront Park stormwater retrofit project is located two blocks east of Cocoa Village, within the City of Cocoa along the Indian River Lagoon, south of SR 520. The total area of the three drainage basins addressed by this project is approximately 12 acres. This stormwater retrofit project was designed to improve water quality in the Indian River Lagoon system by capturing the first half to three-quarters of an inch of stormwater runoff from the 12-acre Cocoa Village area and rerouting it to the Jerry Sellers Wastewater Reclamation Facility (JSWRF) for treatment and reuse.

Several stormwater treatment train components were installed for this project. A sedimentation/ baffle box was constructed for each of the three pipe systems that allow access for routine maintenance; these BMPs remove trash and silt prior to routing the first flush of runoff to a stormwater storage system. Each of the three basins contains a storage system consisting of connected underground pipes, and/or connected underground 10,000-gallon fiberglass storage tanks. Stormwater passes through the baffle boxes to a weir diversion box, and is routed offline to an underground storage system. The first flush averages ½ inch – ¾ inch of runoff over the drainage basin. Stormwater is pumped via an on-site lift station to the JSWRF during overnight periods of low flow. Stormwater is finally brought in to the head of the wastewater

treatment plant and treated along with normal plant influent. The resulting reclaimed water is then sent into an existing reuse system for irrigation throughout the City, including Waterfront Park.

RESULTS

Overall, the project significantly reduces pollutant loading into the Indian River Lagoon, increases alternative water supplies, and uses unused capacity at the JSWRF, which is currently operating at 48% of capacity. In addition, the Waterfront Park replaced a 1.1 acre impervious asphalt parking lot with grass and vegetation which significantly enhance current percolation capabilities and further minimize stormwater runoff. Depression areas were also created to collect and percolate Waterfront Park surface runoff.

Pre-existing conditions at the park site are shown in Figure 1 below, while the completed project is shown in Figure 2.

Figure 1 - Site before project began

Figure 2 - The completed stormwater retrofit

Approximately 22,030 cubic feet of effective storage is contained in the system. For the 12 acre drainage basin, this volume equates to an available capture volume of 0.506 inches of actual runoff volume. Overtopping of the weirs and discharge to the Indian River Lagoon occurs after this volume has been captured. The intensity and duration of the storm events determine at what point in time this occurs. It is estimated that approximately 615,780 cubic feet or 4,606,034 gallons of surface water runoff is captured per year. Estimated annual pollutant load reductions (in pounds) are shown in the table below.

Estimated Annual Pollutant Load Reduction	
POLLUTANT	**POUNDS**
Total Suspended Solids (TSS)	3,457
Total Nitrogen (TN)	96
Total Phosphorous (TP)	12
Chemical Oxygen Demand (COD)	7,683
Biological Oxygen Demand BOD)	576
Zinc	6
Lead	7

PARTNERS AND FUNDING

The project was funded by $197,460 in Section 319 funding from the USEPA. Additional funding was provided by the City of Cocoa, St. Johns River Water Management District and the Indian River National Estuary Program for a total project cost of $545,075.

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